

THE DENTAL Digest

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DAVID W. PHILLIPS, D.D.S. (Northwestern University, 1916) is a general practitioner who has already done more than one man's share toward the progress of his profession. Back in April, 1932, Doctor Phillips wrote: "While it must be admitted that dentistry will probably always consist essentially of fine hand work, the statement can nevertheless be made that the profession has not fully availed itself of many of the advantages of the machine age." He thereupon began to correct the deficiency by contributing in that issue of this magazine his first report of AN AUTOMATIC INVESTING MACHINE. In February, 1933, also in these pages, a new control powder was first described in his SCIENTIFICALLY CORRECT INLAY TECHNIQUE. In February of this year, the first published account was made in our Notes on the Cuff department of Doctor Phillips' positive mechanical bridge fixation technique in which a simple marginal locking precision pin is used to prevent the displacement of

About our CONTRIBUTORS

cast bridge retainers. Now, in this issue, appears an extended application of the fixation technique for IMMEDIATE GOLD INLAYS. This is a revolutionary method in which preformed gold inlays are used in special cases, particularly for young people who might otherwise require amalgam or cement. No wax pattern, no investing, or casting are necessary, and the whole operation may be done in twenty minutes.

LEE A. KELLY received his D.D.S. in 1919 at the Kansas City-Western Dental College. Doctor Kelly has a general practice. His article in this issue is intended for education of the dental patient.

HERSCHEL STANLEY GLICK, D.D.S. (University of Southern California, 1919) has

written numerous short articles. Doctor Glick, a general practitioner, gives us in this issue a practical one-page clinic.

FREDERICK A. ROMBERG, D.M.D. is a graduate of Tufts Dental College, the class of 1919. Doctor Romberg has previously contributed to the dental literature and practices general dentistry.

LEVON M. SAGHIRIAN, D.D.S. (University of Pennsylvania, 1924) will be recalled by DIGEST readers as the author of THE TECHNIQUE OF OPEN DROP ADMINISTRATION OF VINYL ETHER (April, 1938) and ELECTROSURGERY IN THE MOUTH which, like his article in the present issue, was illustrated in full color in addition to black and white reproductions. Doctor Saghirian's present article on periodontia, describing the action of a new drug will be found to be meticulously prepared and scientifically documented. He, too, is a general practitioner but with a special interest in oral surgery.

Immediate Gold Inlays

DAVID W. PHILLIPS, D.D.S., Chicago

IMMEDIATE GOLD INLAYS with marginal adaptation superior to that obtained by the casting process can now be placed within a fraction of the time required to place amalgam restorations or gold foils. This is one of the developments incidental to the technique I¹ described for mechanical bridge fixation. Users of my technique inform me that they often find opportunities to employ this immediate gold inlay application.

The immediate inlay method is possible because of the successful reversal of inlay procedure: cutting an exact cavity to fit a preformed precision inlay. This procedure applies to small, one-surface cavities on the following accessible surfaces: buccal, labial, lingual, occlusal, and even proximal when the adjacent teeth are not present. For the present this procedure is not applicable to the gingival. Ready-made cylindrical, hard-gold pin-inlays, accurate to within a thousandth of an inch and three new-type precision drills that cut a cavity to their exact dimensions have been devised to make this a simple, precise procedure.

The Handle-Pin

The gold-pin inlays are 1.25 mm. in diameter and 1.75 mm. in length with beveled heads to meet the biomechanical requirements of beveled cavity margins. To manipulate such small inlays, to place them into the prepared cavity to verify the fit, and especially to remove them thereafter would be impossible without a means for handling them; therefore, a slender handle has been provided for grasping the inlays with the pliers. The handle extends from the central part of the head. This clean handle, free from cement, also eliminates the unusual difficulty of cementing such a small piece.

The junction of the handle with the pin, being well spaced from the peripheral margin of the head, permits

¹Phillips, D. W.: Positive Mechanical Bridge Fixation: Read before the monthly meeting of the Chicago Dental Society, January 16, 1940 and the Chicago Dental Society Midwinter Meeting, February 15, 1940. Summary of technique published in Notes on the Cuff department, DENTAL DIGEST, 46:68 (February) 1940.

DIGEST

1. Immediate gold inlays are now possible with assurance of marginal adaptation and a saving of time.
2. Immediate gold inlays are a development of the mechanical bridge fixation technique.
3. The usual inlay procedure is reversed: An exact cavity is cut to fit a preformed precision inlay.
4. Pin-inlays are ready-made, cylindrical, of hard gold, and are accurate to within a thousandth of an inch. The pin-inlay is an inlay with a pin for handling it. After the inlay is placed and cemented the pin is severed with a wire cutter.
5. Three new-type precision drills cut the cavity to the exact dimensions of the pin-inlay.
6. The immediate gold inlays are at present applicable to small one-surface buccal, labial, lingual, occlusal, and sometimes proximal cavities.

severing the handle with a small wire cutter as soon as the pin-inlay has been introduced into the cavity with

the cement, without any danger of impairing the margins.

The Drills

The development of three new-type drills has made this reversal of inlay procedure practical and precise. Cutting a cavity of exact predetermined dimensions and form to receive the pin-inlay is one of the simplest and quickest operations in dentistry as well as one of the most accurate.

The drills, in the order in which they are used are:

1. The starter, drill 1, which is of exact pin diameter with a roundly-pointed cutting end that facilitates starting the cavity at the exact point desired. It has smooth non-cutting sides to prevent enlarging the cavity beyond the diameter of the pin-inlay. It also has a shoulder which stops the cutting as soon as the drill has cut a shallow cavity. This prevents creeping of the next drill applied.

2. The cylindricutter, drill 2, which is a flat end-cutter. It is likewise of exact pin diameter with non-cutting sides. This drill cuts the cylindrical part of the cavity to its full depth. It, too, has a shoulder, accurately spaced from its end, which stops the cutting at the precise depth to which the pin reaches. This drill is provided with lateral escapes for debris.

3. The beveler, drill 3, which bevels the cavity margin to conform accurately with the beveled head of the pin-inlay. The smooth cylinder which projects from within its beveled knives prevents any further cutting of the cavity except the desired sur-



Fig. 1—Appearance of inlays in natural teeth.

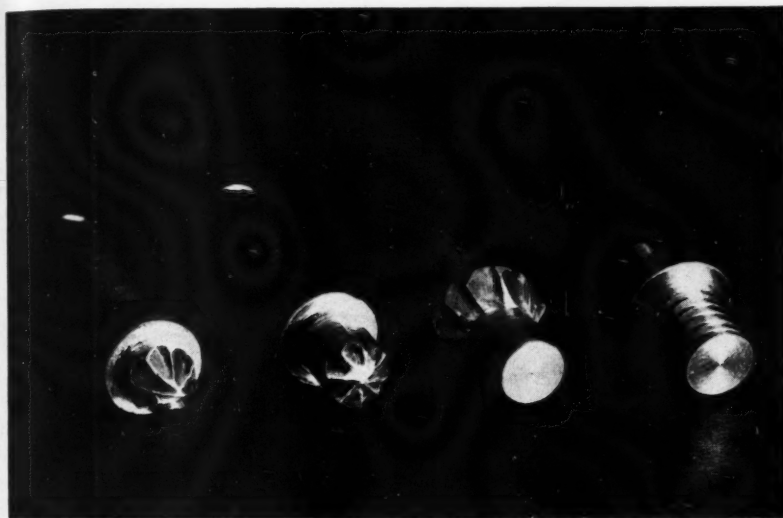


Fig. 2—Oversize brass models of drills to show detail, arranged in order from left to right: drills 1, 2, and 3, and the handle-pin at extreme right.

gine is started to prevent cutting a new path.

3. Always blow the débris forcefully from the cavity and clean the knives of the drills before placing or replacing them.

4. Keep in mind that the drills are used almost entirely on enamel where all burs dull more easily than on dentine, and that cutting enamel requires more pressure.

5. One may prepare for the starter with a fine, tapered fissure bur if he chooses.

Technique

1. Insert the starter, drill 1, until its cutting is stopped by its depth-limiting shoulder.

2. The cylindricutter, drill 2, is used with firm pressure until it is stopped by its shoulder. This drill cuts the

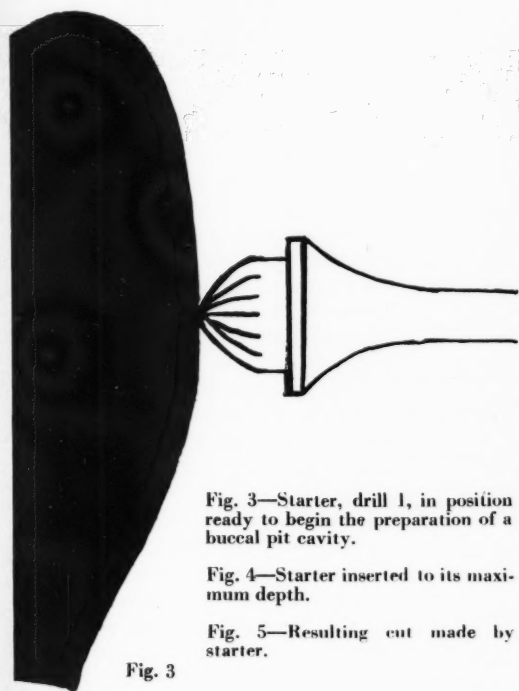


Fig. 3—Starter, drill 1, in position ready to begin the preparation of a buccal pit cavity.

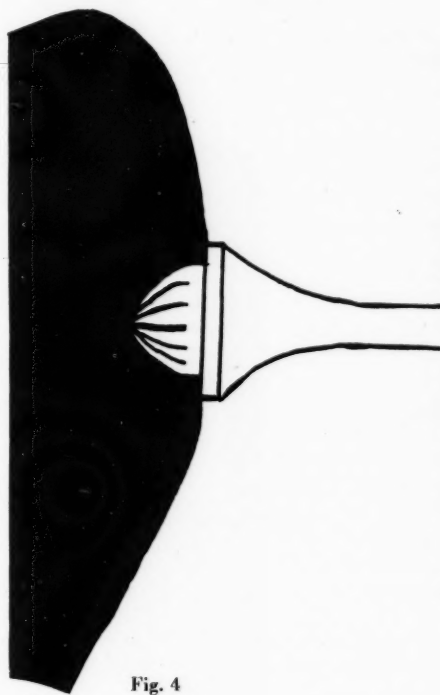


Fig. 4—Starter inserted to its maximum depth.



Fig. 5—Resulting cut made by starter.

face bevel. The smooth end of this cylinder is stopped by the floor of the cavity when the precise bevel has been cut.

It will be noted that the design of these drills is such that none can cut beyond its fixed diameter and that each drill has a definite means for stopping its cutting at the exact point desired, which makes it virtually impossible ever to cut too deeply with any of them when applied occlusally or incisally of the gingival line. The limiting of their cutting to a depth

of 1.75 mm. eliminates the danger of pulpal exposures except in the teeth of young patients where their use, particularly on the lingual surface of anterior teeth, should be avoided until the pulp has fully developed.

Technical Suggestions

1. All drills are held at all times perpendicularly to the surface of the tooth and are used with the pressure straight into the tooth.

2. The drills are always placed and replaced into the cavity before the en-

major portion of the cavity. I always use it under a flow of water to dissipate the frictional heat and permit a quick comfortable cut.

An oversize set of drills has been provided to extend the cavity if, after the regular-size 2 drill has been used, its diameter has not been large enough to remove all the caries. The oversize drills cut no deeper but are of slightly larger diameter. They are then used in the regular order starting with drill 1. Oversize gold pin-inlays of the same size have also been provided.

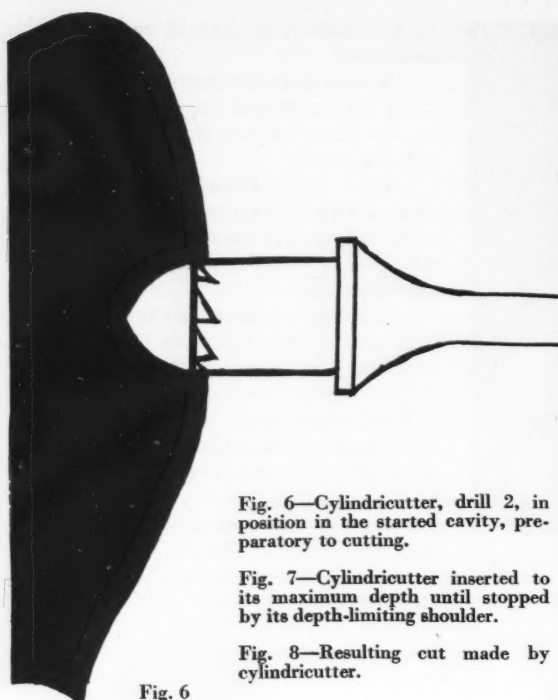


Fig. 6—Cylindricutter, drill 2, in position in the started cavity, preparatory to cutting.

Fig. 7—Cylindricutter inserted to its maximum depth until stopped by its depth-limiting shoulder.

Fig. 8—Resulting cut made by cylindricutter.

Fig. 6

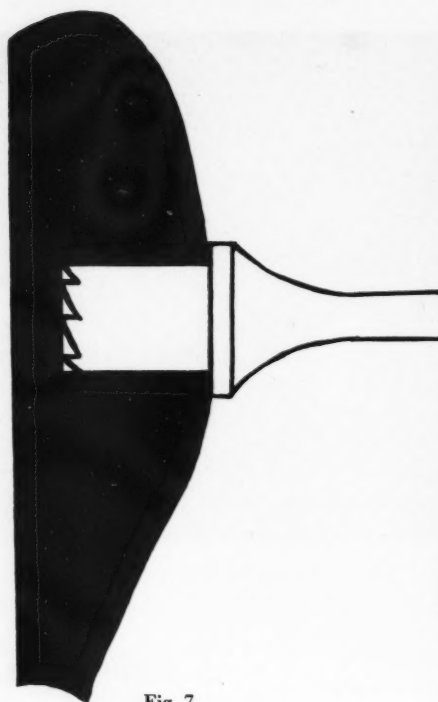


Fig. 7



Fig. 8

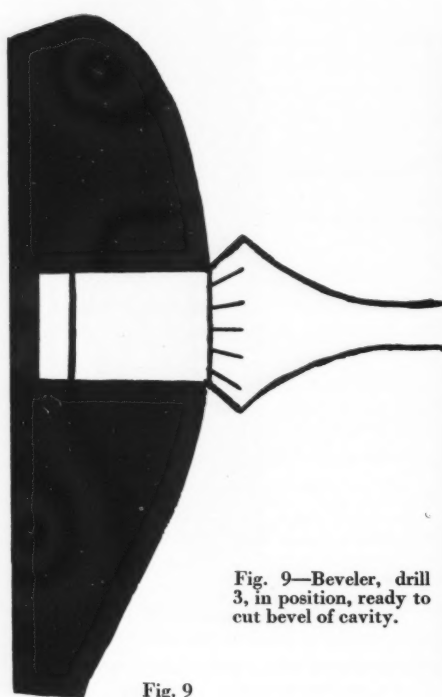


Fig. 9—Beveler, drill 3, in position, ready to cut bevel of cavity.

Fig. 9

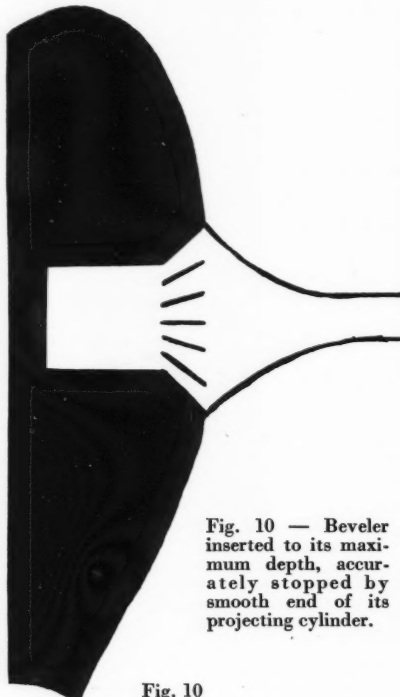


Fig. 10 — Beveler inserted to its maximum depth, accurately stopped by smooth end of its projecting cylinder.

Fig. 10

3. Blow the débris from the cavity, clean the knives of the cylindricutter; and insert the cylindricutter again as deeply as possible. Repeat until the absence of débris on the knives proves that the cavity has been cut to its maximum depth.

4. Finish the cavity preparation

with the beveler, drill 3, pressing it to place likewise as far as it can go.

5. Air-blast the débris from the cavity before verifying the fit of the handle-pin. Because of the accuracy with which the pin fits the cavity a small amount of débris can make an evident difference in its fit. For the

same reason use fairly thin cement.

If a little caries remains on the floor of the cavity after preparation, it may be removed with a small round bur without impairment of the fit of the pin-inlay. The beveled head of the inlay provides a stop where it is most useful for good marginal adaptation of the pin-inlay, on the surface of the tooth.

6. If, on try-in, the pin does not seat perfectly, the drills have not been used to their maximum depth. In that case, repeat the cuts with drills 2 and 3.

7. Cement the pin-inlay and sever its handle in one quick operation by holding it gently grasped by the wire cutter, (an ordinary rongeur is ideal for this purpose), where the handle joins the body of the pin, and pinching the handle off the instant the pin has been introduced into the cavity with the cement. The pin is immediately seated with firm pressure.

8. Be sure to let the cement harden fully before grinding off the tiny nub left from the handle or burnishing the margins of the pin-inlay. For these purposes use only fine stones or sandpaper discs.

When placing immediate pin-inlays in occlusal pits, before starting the cavity preparation, flatten the area around the pit with the flat end of a cylindrical fine stone that is a little



Fig. 11—Completed cavity with handle-pin in position ready for placement into cavity to verify fit.

Fig. 12—Method of flattening the cuspal area about an occlusal pit cavity before preparation. Note shape of fine-grained stone used. No trimming is necessary at point where cavity itself is located.

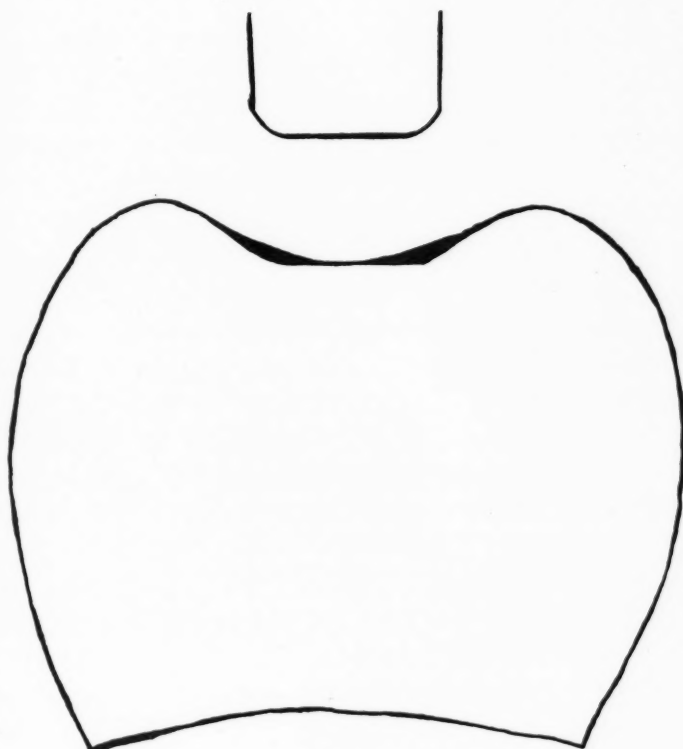


Fig. 12

larger than the diameter of the shoulders of the drills in order to prevent the cusps from stopping the drills too soon. The ground area is left smooth.

Although straight-handpiece drills are used most often to lock fixed bridge retainers or inlays for broken-down or short teeth with this technique, drills for the latch or Densco handpiece are usually employed for immediate gold inlays.

Partial Denture Retention

Immediate inlays have a fortunate application in partial denture construction when it is necessary to clasp a straight-sided or tapering tooth. Such a tooth can be made serviceable for positive clasp retention in a comparatively few minutes with this technique.

An immediate inlay is placed at a point convenient for the reception of the retentive bearing of the clasp and its surface is made somewhat concave to provide the necessary undercut.

Conclusion

The immediate gold inlay technique is the offspring of the mechanical bridge fixation technique, the purpose of which is to make simpler inlays for the conservative Black preparations serviceable as secure bridge retainers which, when locked, can be made even more retentive than the more destructive, more difficult preparations used heretofore.

The patient's reaction is favorable because the immediate gold inlays do not require the placement of temporary fillings and an additional trip for completion.

The gold-pin inlays are time-savers which produce results highly satisfactory to both the patient and the careful operator.

It is admitted that the immediate inlay feature of this technique is limited to certain types of cavities; but the alert operator will find many instances in which he can profitably employ the immediate inlay application of the mechanical bridge fixation technique.

The simplicity of this technique must not deter the operator from conscientious observance of all recommendations. They are based on broad experimentation with many methods and their faithful fulfillment will produce precise results in the shortest time.

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Educating the Patient to Preextraction Roentgenographic Examinations

L. A. KELLY, D.D.S., Neosho, Missouri

1. **SELECT FOURTEEN** abnormal teeth to be used in a demonstration model. These should include fused roots on the molars, multi-rooted bicusps, multi-rooted cuspid, if possible, teeth of unusual length, unusual spread of roots on multi-rooted teeth, and resorbed roots. Two molars with roots fused together, or second or third molars with the tuberosity adhering are impressive. The more the teeth vary from the normal, the more impressive the demonstration showing the necessity of roentgenography.

2. Place the crowns of selected teeth

DIGEST

Fourteen abnormal teeth are selected and set in a rubber mold to be used in a demonstration model showing the necessity of roentgenography, especially before extractions.

in a rubber mold used to make plaster demonstration models. Kerr's anatomic molds are satisfactory. If rubber molds are not available a compound impression of any mouth with the full complement of teeth will serve as a mold. After the teeth are placed in correct arrangement in the rubber mold, the mold is filled with melted wax. Either base-plate wax or plain paraffin wax is satisfactory. When the wax is thoroughly chilled, remove the rubber mold and add a little more wax wherever the wax appears thin over the roots. Carve the

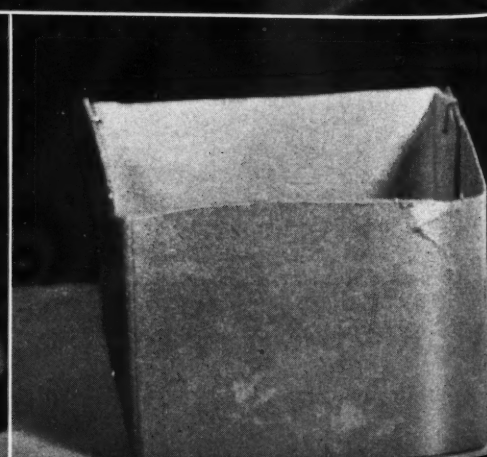
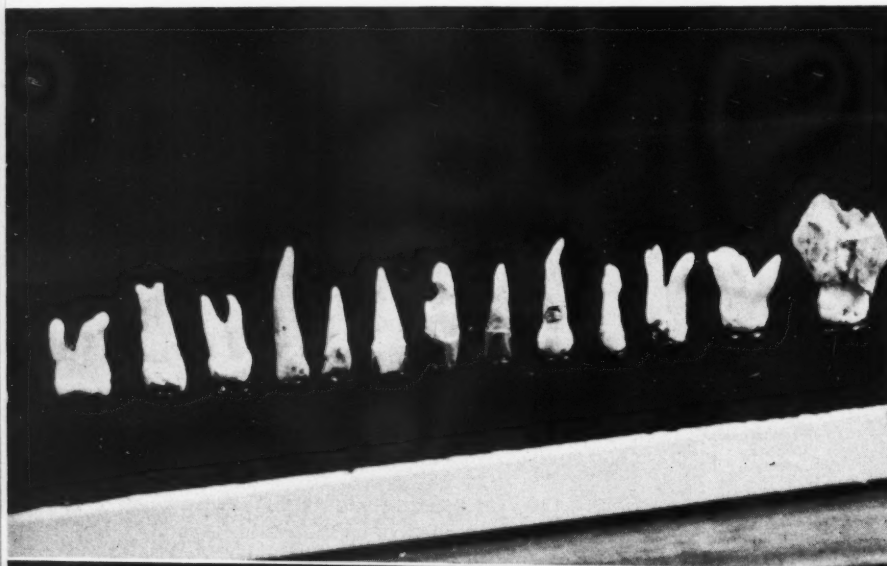
Fig. 1 (Upper left)—Teeth selected to be used in demonstration model.

Fig. 2 (Upper right)—Anatomic rubber mold into which the selected teeth are to be placed in normal position.

Fig. 3 (Lower left)—Rubber mold with teeth in place before pouring full of wax.

Fig. 4 (Lower center)—Wax model containing selected teeth after removal from rubber mold.

Fig. 5 (Lower right)—Pasteboard box of suitable size to be used in flasking wax model, teeth downward. Box is about 4 by 4 by 2 3/4 inches



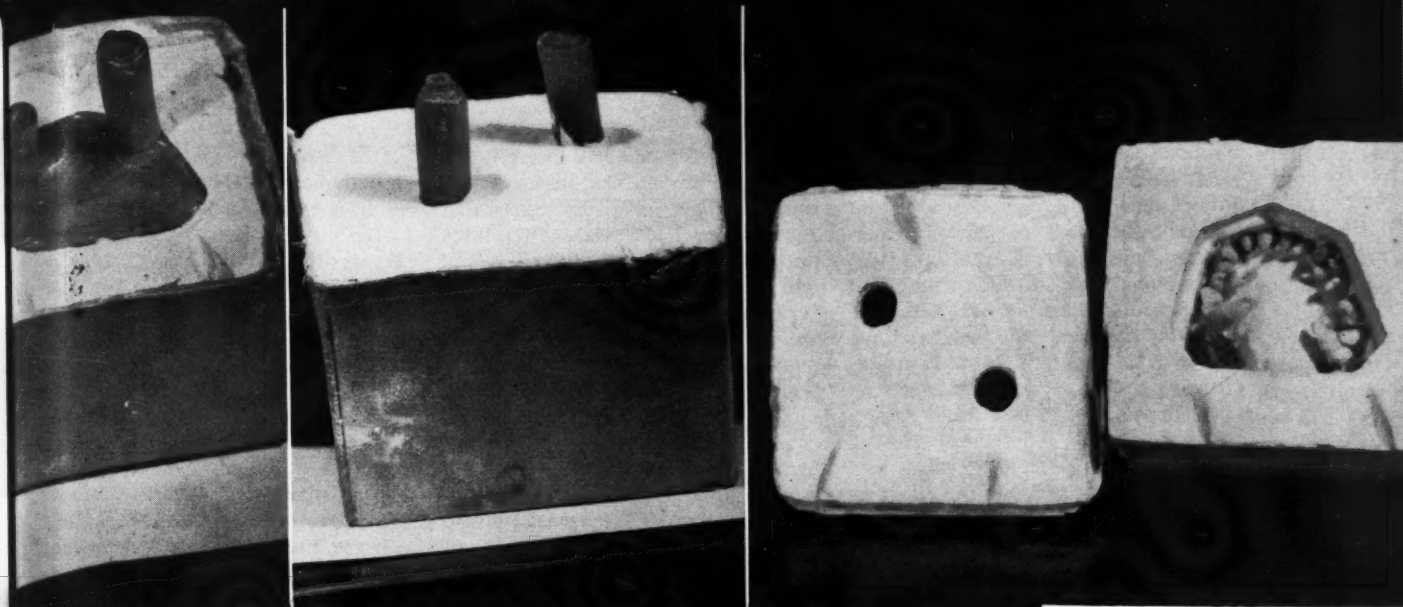


Fig. 6 (Upper left)—Wax model in flask with wax sprues attached. Plaster flush with top of model one-half inch short of filling flask to top. Ready to pour top of flask.

Fig. 7 (Upper center)—Completed flask before separating, with wax sprues extending through lid.

Fig. 8 (Upper right)—Flask after separating and washing out wax with boiling water.

Fig. 9 (Lower left)—Completed demonstration model of soft rubber with teeth in place.

Fig. 10 (Lower right)—Demonstration model with teeth removed.

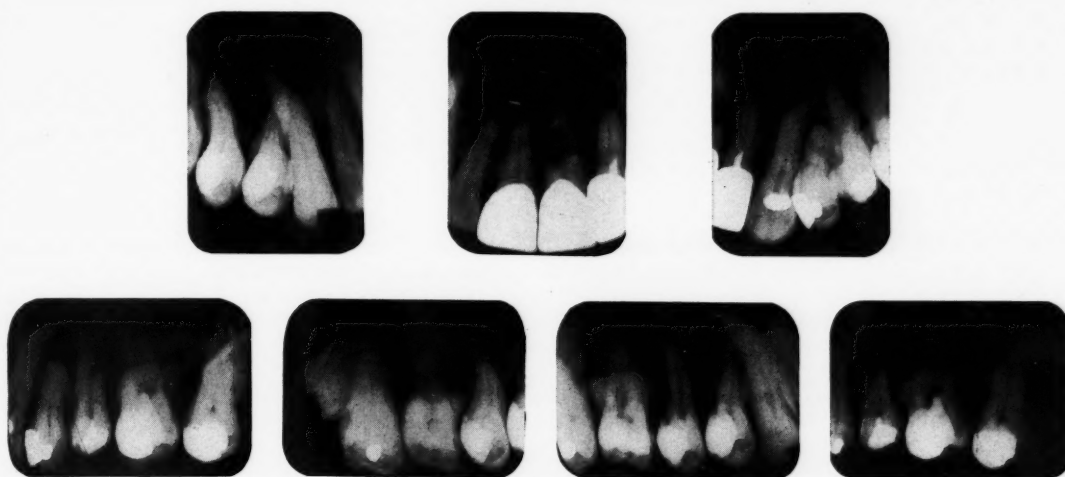
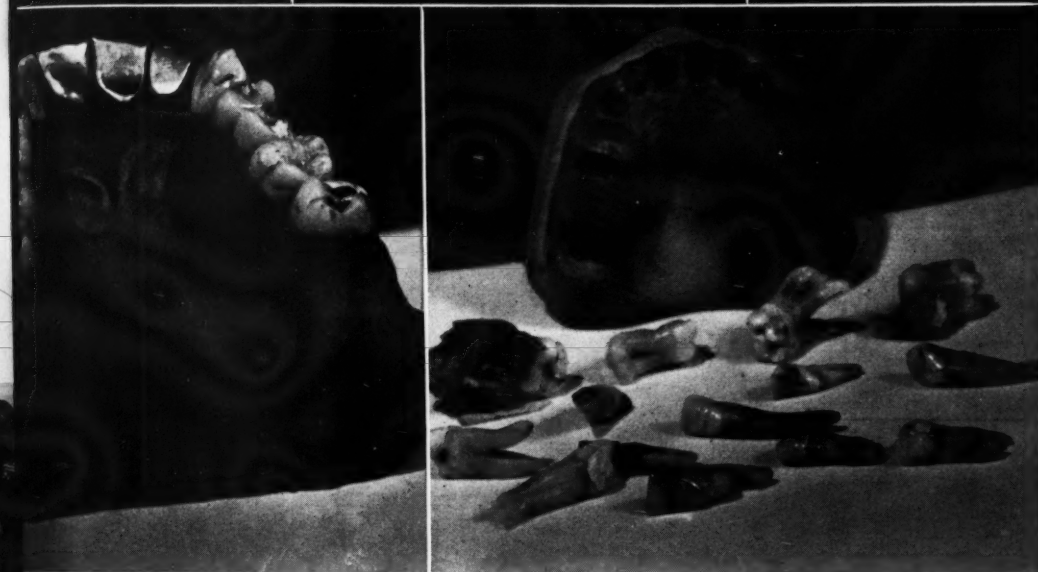


Fig. 11—Roentgenograms of teeth in soft rubber model.

wax as desired in the finished model.

3. Invest the wax model, teeth downward, in a pasteboard box of suitable size. Let the plaster investment come flush with the top of the wax model, but still lack about half an inch of filling the box. After the plaster has set, cut two or three grooves in the outer part of the plaster rim to insure accuracy in replacing the upper part of the flask. Attach two wax sprues, about the size of the little finger, to the top of the wax model, placing them as far apart as possible. Use separating medium and pour the upper part of the flask, completely filling the box.

4. When the plaster has thoroughly hardened, cut the wax out of the sprue-holes and separate. Slowly heat the cast until the wax softens throughout and then wash with boil-

ing water. As soon as all free water is dried out around the necks of the teeth, all excessive undercuts and rough edges of process should be filled or well-rounded with wax. This wax will not interfere in any way with the formation of the rubber model and it will enable the teeth to be removed more readily during demonstration.

5. The material used in making the model is Williams' dermoid (latex rubber), and can be secured from any dental supply house. It requires no vulcanization. Merely fill the mold to about one-fourth inch from the top with this liquid rubber. It begins to congeal immediately. As it congeals, more liquid must be added every twenty to thirty minutes. It requires seven or eight hours for the rubber in a cast of this size to congeal completely. When the mold is almost com-

pleted, place the upper part of the flask in place and pour the liquid rubber in one sprue-hole until it appears in the other. This is repeated at intervals of from twenty to thirty minutes until the liquid congeals in both openings. Let the cast set over-night before removing from the flask.

6. Inasmuch as neither the dentist nor the patient can see below the gum line a roentgenographic examination is necessary to enable the dentist to provide the best service. When the patient sees the dentist remove the teeth from the rubber model, it is easy for the patient to visualize what might happen if extraction were attempted without the knowledge furnished by roentgenograms (Fig. 11).

Bank of Neosho Building.

Announcement of Books Received

A **TEXTBOOK OF PHYSIOLOGY** (302 Illustrations), Seventh Edition, By William D. Zoethout, Ph. D. and W. W. Tuttle, Ph. D., St. Louis, The C. V. Mosby Company, 1940.

CHARLES NELSON JOHNSON: A TRIBUTE By Nelyon Johnson Dewson and John Reynolds Dewson. For Private Circulation, 1940.

LABIO-LINGUAL TECHNIC: A Description of the Labial and Lingual Appliances in the Treatment of Malocclusion (278 Illustrations), By Oren A. Oliver, D.D.S., Russell E. Irish, B.S., M.A., D.D.S., and Claude R. Wood, D.D.S., St. Louis, The C. V. Mosby Company, 1940.

THE HISTORY OF DENTISTRY IN MISSOURI, Fulton, Missouri, The Ovid Bell Press, Inc., 1938.

ORAL SURGERY (553 Illustrations and 7 Color Plates), Second Edition, By Sterling V. Mead, D.D.S., M.S., B.S., St. Louis, The C. V. Mosby Company, 1940.

THEORY AND TREATMENT OF FRACTURES OF THE JAWS IN PEACE AND WAR: With special Reference to the Rôle of the Dental Surgeon and the Dental Prosthetist in the Specialized Treatment of These Injuries (127 Illustrations), By Horace Hayman Boyle, H.D.D. and L.D.S. (R.F.P.S.) Glas., H.D.D. (R.C.S.) Edin., St. Louis, The C. V. Mosby Company, 1940.

A **TEXTBOOK OF EXODONTIA: EXODONTIA, ORAL SURGERY AND ANESTHESIA**, (Illustrated), Fourth Revised Edition, By Leo Winter, M.D., D.D.S., Sc.D. (Hon.) LL.D., St. Louis, The C. V. Mosby Company, 1940.

THE ERA KEY to the United States Pharmacopoeia and the National Formulary Fifth Edition, Revised by Lyman D. Fonda, Newark, New Jersey, The Haynes & George Co., Inc., 1939.

Tray for Impressions of Gingival Cavities

HERSCHEL S. GLICK, D.D.S., Los Angeles

DIGEST

Compression of wax is all-important in taking patterns for gingival inlays. Stock trays often are too large or too small or the curvature is not right. Compound trays soften under the heat of the wax. The procedure shown in the accompanying diagrams has proved helpful. It takes only two or three minutes.

Fig. 1—From a half-inch annealed copper band which best fits the contour of the tooth in size and curvature, make cuts. Cuts A are made first with a carborundum disc. Start from the far side of the band. Then make cuts B with shears.

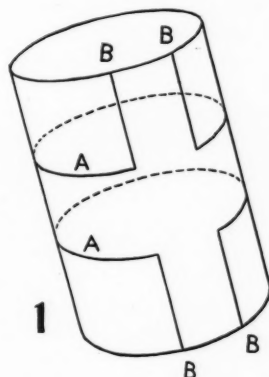


Fig. 2—This is the pattern that has been cut out of the band.

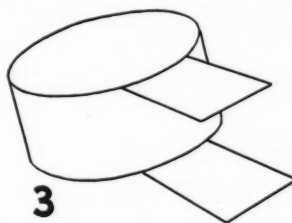


Fig. 3—Bend tabs down.

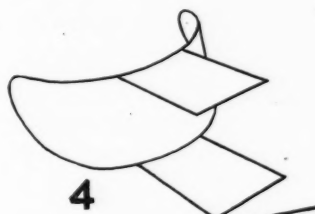
1

2

Fig. 4—Trim the band and burnish to tooth contour.

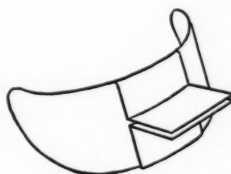


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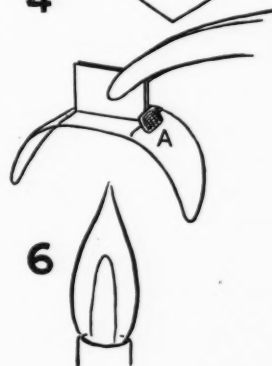
Fig. 5—Crimp tabs down into a handle.



5

Fig. 6—Grasp tray with laboratory pliers; paint entire outside with zinc chloride flux (made by dropping pieces of zinc into a small bottle of hydrochloric acid); add a bit of ordinary soft solder (A); hold over a flame. The solder will flow over the outside of the tray, thus reinforcing it.

In taking the impression, grasp the tray by the handle with strong pliers; vaseline or oil the inside lightly, and melt inlay wax into it. Be careful not to get any wax on the outside. Carry the impression to place and hold under pressure until the wax is cool.



6

The Pin-Lock Inlay

FREDERICK A. ROMBERG, D.M.D., White Plains, New York

THE RESTORATION OF the incisal angle of anterior teeth has always been difficult, especially so in younger patients. Owing to the restricted area permissible for retention and the danger of irritation to the pulp, the type and size of restorations are limited.

Radical tooth preparations tax the endurance of both the operator and the patient and often necessitate high fees. It is not uncommon to have a tooth prepared for a porcelain jacket when only the incisal angle has been broken. The porcelain jacket is one of the finest restorations in dentistry, but extensive cutting is sometimes required, and too often, in later years beneath the good-looking porcelain jackets are found devitalized or diseased pulps. The pin-lock inlay is, therefore, suggested as a preferred restoration in indicated cases.

The preparation of the pin-lock inlay does not require the use of special instruments or specialized technicians. It is fairly simple to make and is completed in a relatively short time.

Technique

An upper right central incisor will be used as an example in describing the technique. The incisal corner is to be restored:

1. Square the margins with a fissure bur and make a class 3 cavity in the mesial surface of the tooth (Fig. 1).



Fig. 1—Incisal corner broken.

DIGEST

A pin-lock inlay is suggested as the preferred restoration of the incisal angle of anterior teeth. A simple technique is outlined. Contraindications are mentioned.

2. Build up the tooth in cement to the original contour and contact (Fig. 2). Mold a corner of a celluloid



Fig. 2—Tooth restored in temporary cement to original contour and contact.

crown form to fit the contour of the temporary cement restoration. This will be used later to mold the silicate. A denser polished surface with a minimum amount of finishing will thus be provided.

3. Bevel the incisal edge at the expense of the lingual with a small wheel stone (S. S. White, number 13), being careful not to reduce to the labial enamel.

4. Cut a groove into the bevel between the labial and lingual enamel plates with a knife-edge stone, being careful not to undermine the labial enamel.

5. Cut a step at the distal end of the groove with a 702 fissure bur. Do not remove the distal contact of the tooth.

6. Cut an additional hole into the step with a 700 fissure bur to ap-

proximately 2 minims, depending on the amount necessary for retention.

7. Make a double bevel at the mesial corner of the temporary cement restoration. This is to insure protection for the final porcelain restoration. The last five steps are shown in Fig. 3.



Fig. 3—Tooth prepared with bevel, groove, lock-step, and double bevel.

8. Use a number 700 bur blank as a sprue and wax the inlay directly. The bur blank will afford a definite fit and direction for the inlay to seat itself. It fits exactly into the hole made with the number 700 fissure bur (Fig. 4).

9. After the inlay of hard gold is

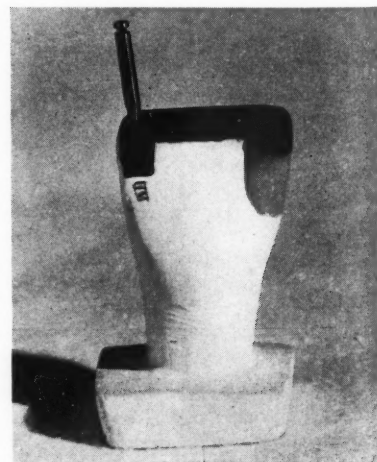


Fig. 4—Inlay waxed directly on tooth with a 700 bur blank seated and used as a sprue. Pencil mark indicates depth to which sprue fits into dentine.



Fig. 5—Diagrammatic sketch showing cast inlay with 22 gauge stabilizing wire soldered in place, but not trimmed.

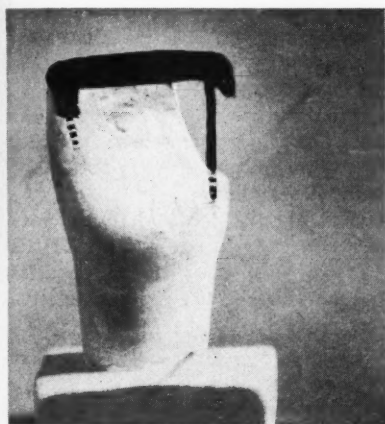


Fig. 6—Inlay fitted into place. Markings indicate depth to which pin and wire fit into dentine.

cast, drill a hole 1 mm. from the free end of the inlay with a number 1 round bur and pass a 22 gauge 18 K. gold wire parallel to the cast pin and approximately the same length as

the crown. Solder this stabilizing wire to the inlay by an open flame (Fig. 5). The length and direction of this stabilizing wire is easily determined by trying it on the tooth after the temporary cement has been removed. If it is off direction, it can easily be bent, and if it is too long, it can be easily ground.

10. Just before seating, a depression is ground into the gingival floor of the cavity with a number 1 round bur so as to make the inlay more stable (Fig. 6).

11. The inlay is then cemented into place, the temporary filling having already been removed.

12. With the aid of the crown form which was molded to the temporary filling, silicate is placed in the window and held under pressure. Less finishing is thus required and a harder and more lasting surface will be had.

Conclusions

Although the pin-lock inlay is not intended to replace either the porcelain jacket or porcelain inlay, it has a definite place in dentistry. It necessitates a minimum amount of tooth destruction and thus preserves the natural appearance. It has remarkable strength. Translucency is preserved by the absence of a metal backing. The pin-lock inlay is easily repaired. It does not require the use of special instruments, and is relatively simple to make. It is especially useful in upper anterior teeth, even in younger patients when a corner of the tooth has been fractured.

The pin-lock inlay is contraindicated in mouth-breathers; when there is unusual traumatic occlusion; and in thin teeth.

143 Maple Avenue.

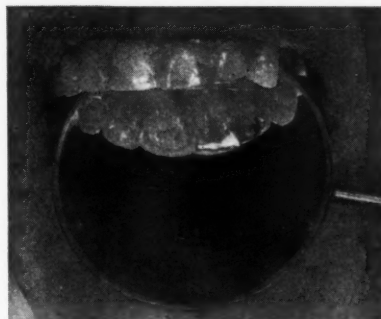


Fig. 7—Pin-lock inlay seen from labial and reflection from lingual. Note preservation of natural translucency in pin-lock inlay on left central and lateral and loss of translucency in porcelain jacket on upper left cuspid.



Fig. 8—Teeth before preparation for pin-lock inlays.



Fig. 9—Central incisor with pin-lock inlay completed. Lateral with inlay in place, without porcelain.

CHANGE OF ADDRESS

THE DENTAL DIGEST will be grateful to readers who change their addresses if they will send both the old and the new address. Please also allow at least two weeks for an address change to become effective. Mailing envelopes are of necessity addressed two weeks or more prior to the publication date; hence when your address change reaches us late in the month preceding publication, it is often impossible to make it effective before the second month following.

Electrosurgery and Collateral Treatment

LEVON M. SAGHIRIAN, D.D.S., Philadelphia

THE SCOPE AND utility of high frequency modulation as a therapeutic measure in the treatment of soft tissue disease in the mouth has been previously described and illustrated by me in this magazine.¹ Considerable interest in electrosurgery has developed in the recent past, with particular reference to the correlation of agents and methods used preoperatively, operatively, and postoperatively. Based on data compiled from clinical investigations and from experiences gathered in private practice, this paper will discuss in detail: (1) electrosurgical technique, based on a study of 350 cases, since January, 1937; and (2) collateral treatment, including a clinical report on new antiseptic compounds of the class of alkyl and halogen phenol derivatives, which were found to be of value and which have been used extensively since March, 1935.

General Considerations

Prinz and Greenbaum² in describing the treatment of pyorrhea state that despite the most careful mechanico-chemical disposal of the concretions about the root surfaces of pyorrheal teeth and the destruction and removal of the granulation tissue from the cul-de-sac curettage, these methods may fail to bring about the desired results; namely, the obliteration of the pocket. They state that the selection of the method of treating pyorrhea alveolaris must be based on the early recognition of its causative factors and the correct interpretation of its clinical symptoms. The rational treatment of this disease, therefore, resolves itself into: (1) preliminary sanitation, (2) surgical procedures, (3) etiotropic and organotropic medication, (4) prosthesis, and (5) prophylaxis.

Inasmuch as it is impossible in routine clinical practice to rely on any one mode of therapy, a judicious combination of procedures indicated for the individual case should be applied.

In a general review of the clinical pathology of the periodontal pocket, Kronfeld³ stated that the therapy should be directed mainly toward elimination of the pocket and the control of the suppuration. After these two effects have been achieved, no further treatment is necessary as a rule, beyond maintaining efficient oral hygiene.

Electrosurgery

The use of high frequency electric current has attained a place of prominence in general surgery; no doubt, in time it will do likewise in dental practice. When indicated, one need not hesitate to use electrosurgery in the mouth. Experience has proved its value as an adjunct in the control of periodontal disease. It may also be used successfully for such minor surgical operations as the excision of hypertrophied and hyperplastic tissue, flabby ridges and tuberosities, pericoronal flaps, correction of low muscle attachments, and frenums; it serves as a fine dissecting knife, cutting without bleeding, for the destruction of diseased tissue and for the control of hemorrhage. Many other uses have also been suggested, such as in root canal therapy, sterilization of sockets, desiccation of tissue, opening of abscesses, and fulguration of malignant growths.

According to Kovacs⁴ there are several factors influencing the rate of tissue destruction in any electrosurgical procedure, whether desiccation, coagulation, or cutting with the plain tube or blended current: (1) the intensity of current used (the greater this intensity, the more destruction); (2) the duration of application (the longer the contact, the deeper the desiccation or coagulation, and the faster the movement of the cutting electrode, the less destruction on each side of the incision); (3) the size of the electrode (the larger the contact surface, the greater the amount of current and the more tissue destruction).

Certain observations by Immer-

kamp⁵ indicate that vascularity reduces the values of resistance. Tissues of this character will therefore be cut readily by the electric current. Vascularity furnishes also a cooling effect by reason of the rapid dissipation of heat through the blood flow; consequently, inflamed vascular gingivae will be cut with ease and without heavy coagulation. These observations are confirmed by Phillips⁶.

Inasmuch as the current intensity is a function of voltage, it is possible in electrosurgery to control the depth of coagulation, and in electrosection, the width of the zones of coagulation. It is necessary therefore to use that voltage which will give a good cutting effect and sufficient depth of coagulation. A further increase of power does not improve the cutting ability of the current, but merely makes for heavier coagulation.

A current of too high power, accompanied by a slow motion of the electrode first coagulates then dries the surface in contact with the electrode, producing a sear, which as a relative nonconductor causes the current to dam up and to spark with formation of charring.

Clinical experience yields convincing visual evidence as to gradual tissue regeneration, with the proper postoperative care and medication.

Indiscriminate use of electrosurgery should be discouraged. The understanding of electrosurgery should be cultivated by experience. It demands the mastering of a new technique, which is delicate and precise in character. It requires a perfect coordination of eye, foot, and hand. The electrode is first placed in position, then the power turned on and the electrode guided with a deliberate even motion. When the incision is complete the power is turned off and the electrode removed. At no time should an electrode be used as a cautery; the heat generated is not in the electrode but in the tissue.

Postoperative pain is often comparatively faint, owing to the destruc-

¹Saghirian, L. M.: Electrosurgery in the Mouth, DENTAL DIGEST, 46:20 (January) 1940.

²Prinz, Hermann; and Greenbaum, S. S.: Diseases of the Mouth and Their Treatment, Philadelphia, Lea & Febiger, 1935.

³Kronfeld, Rudolf: Clinical Pathology of the Periodontal Pocket, J. A. D. A. 27:499 (April) 1940.

⁴Kovacs, Richard: Electrotherapy and Light Therapy, Philadelphia, Lea & Febiger, 1938.

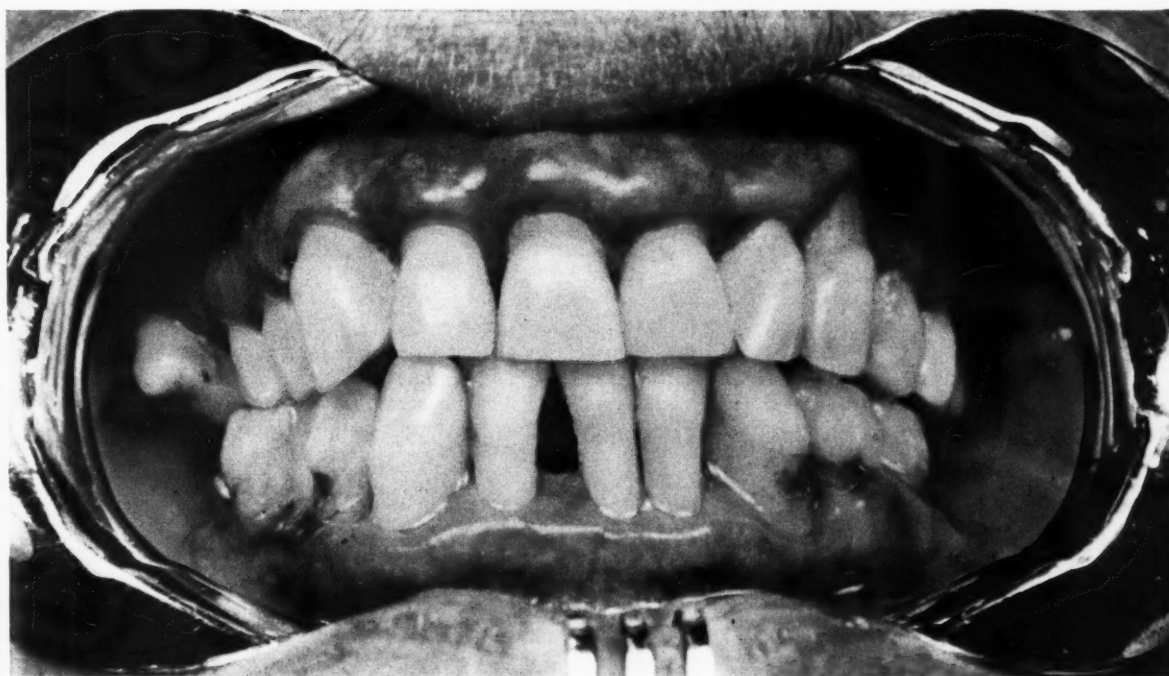
⁵Immerkamp, A.: The Status of Electrosurgery in Operative Dentistry, Translation, New York, American Cystoscope Makers, Inc., 1938.

⁶Phillips, D. W.: The Pitfalls of Electrocoagulation, J. A. D. A. 25:937 (June) 1938.



Color Plate I

"Schmutzpyorrhoea" (Gottlieb): associated with oral sepsis; fetor oris; inflamed bleeding gingivae; heavy calcarious deposits; loose teeth; malocclusion; organic, and orthopedic disease. Treatment begun August 29, 1939.



Color Plate II

Date photographed: February 8, 1940. Symmetrical gingival recession (esthetically not objectionable); several teeth removed; occlusion corrected; mouth hygiene attained by complete prophylaxis, and maintained by the continued use of the prescribed antiseptic.

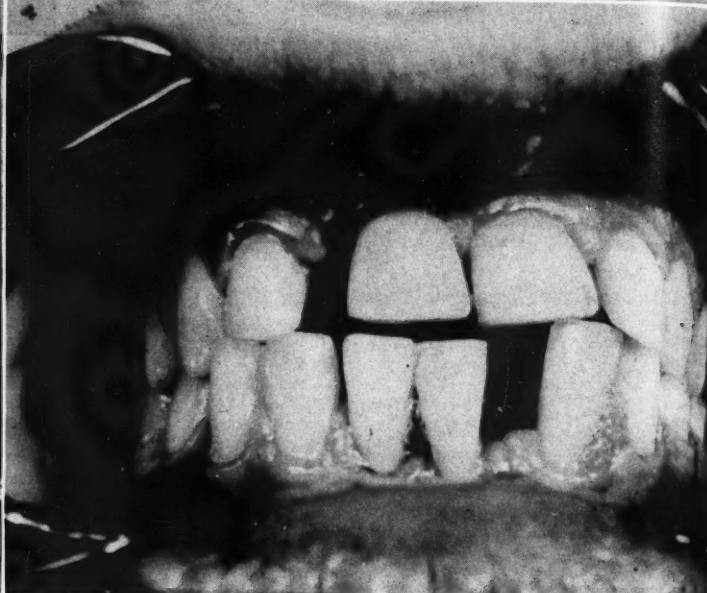
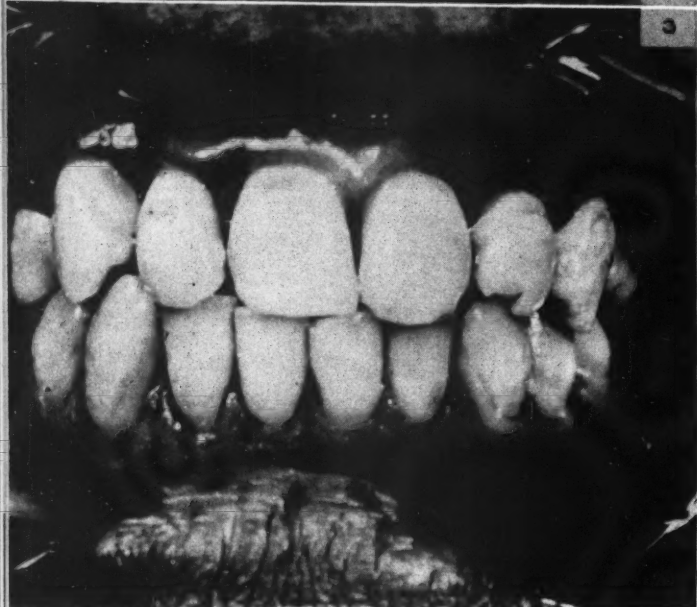
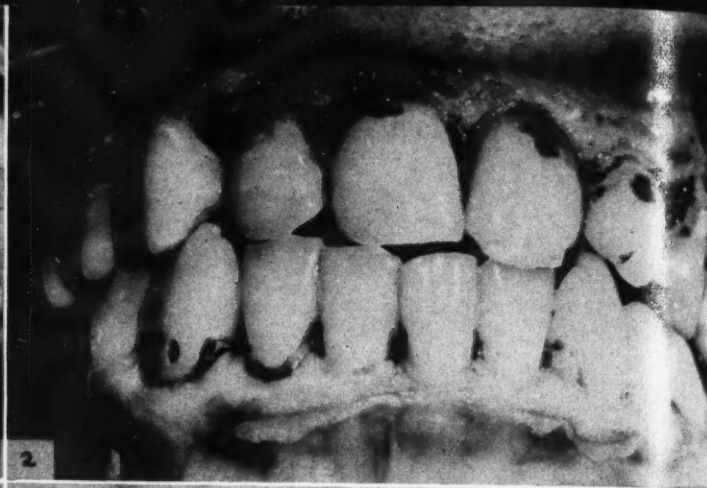
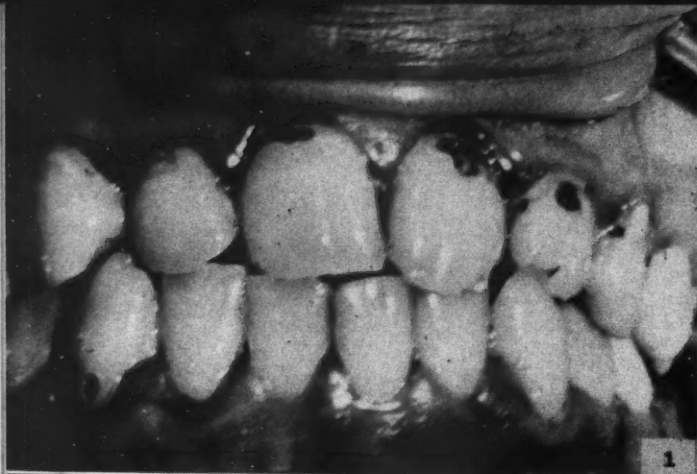


Fig. 1—Chronic suppurative periodontitis, heavy subgingival calculus and caries throughout.

Fig. 2—Appearance of mouth immediately following electrosurgical resection. Exposing subgingival calculus.

Fig. 3—Appearance of mouth two months later.

Fig. 4—Mouth of chronic diabetic patient. Note diastema.

tion of nerve endings and to the sealing up of possible sources of infection.

Operators of cutting apparatus should learn to synchronize the movement of the electrode with the closing and opening of the electrical circuit; they must learn to use only the tip of the electrode for incision directly across the tissues.

A thin film of coagulated tissue forms along each side of the incision, sealing the small blood vessels and lymphatics. The edges separated by the "electric knife" can be sutured, and healing by first intention will follow the proper technique if there was neither charring nor deep coagulation of neighboring tissue.

The cardinal rule in regulating the intensity of the current is this: One should always use the lowest intensity

that cuts freely to the desired depth; one should choose the size and shape of the electrode according to the electrical resistance of the tissue under the electric knife. Fat, cartilage, and dry sclerotic tissue require more current. Fatty tissue is likely to boil under heavy current; hence, rapid, shallow cuts are most suitable for subsequent union.

The dispersive electrode used in connection with the monopolar electrodes is a large plate placed under the buttocks.

Electrocoagulation may be used effectively in the absence of perceptible pockets, and may be confined to three or four teeth. Posterior deep pockets, as revealed by full mouth roentgenograms and probing, are managed best by resection with a suitable loop electrode. The type of

unit recommended for general dental use is the tube type generating undamped current from five to six million oscillations per second.

As a case presents itself, the first step is to study the patient physically, medically, roentgenologically and by all other means at hand.

An important feature that the surgeon should consider before employing electrosurgery is the psychological reaction of the patient. Human beings are inclined to welcome the accepted way of doing things and to be skeptical of anything new or unorthodox; nevertheless, the mind is open to suggestion, and delicate handling of the patient is usually rewarded with confidence. The patient should be told in detail what is going to be done. He should be assured that he will suffer no shock or undue pain and that

there will be no unreasonable post-operative pain. The esthetic aspect of the treatment may also be considered. The imperative necessity for postoperative home care and cooperation by the patient should be stressed.

Collateral Medication

In the practice of all surgery, science and experience teaches us that a clean field of operation is essential; this applies to electrosurgery as well.

A general review of the dental literature in reference to the use of various mouth rinses causes unnecessary confusion in the mind of the reader. Widely used mouth washes, such as salt and water, soap and water, sodium perborate, and alcoholic concoctions have gained the public fancy either through the indifference of the dental practitioner who failed to prescribe, or through pernicious advertising of home remedies. Highly exploited, unnecessarily costly proprie-

tary preparations which promise a panacea have overcome lay resistance. These practices have given rise to a defensive skepticism on the part of the profession. It was considered advisable, therefore, to apply old accepted methods first before seeking a suitable medicament for the collateral treatment of electrosurgical cases, which would meet the additional requirements presented by the use of the new methods.

Surgical Cements

Under certain conditions, advanced cases of pyorrhea that could not be treated by the conservative methods of subgingival curettment were treated by the so-called radical surgical method. This method, although known for a number of years, attained its greatest use following its demonstration by Black⁷.

⁷Black, A. D.: In report of Council on Dental Therapeutics, J. A. D. A. 21:890-899 (May) 1934. Chronic Suppurative Pericementitis, J. N. D. A. 7:134 (February) 1920.

Ward⁸ follows an even more radical technique than that proposed by Black. The removal of an extensive amount of hard and soft tissue required by Ward's procedure calls for some protection of the exposed surfaces of the root in the postoperative stages. The tissues are said to regenerate under a pack which is allowed to remain in situ for from seven to ten days after the operation.

The liquid portion of this pack is composed usually of olive oil and oil of cloves, whereas the powder consists of zinc oxide, white resin, and asbestos.

An article by Crane and Kaplan⁹, also describing radical surgical treatment for pyorrhea, recommends a formula for a cement pack, consisting

⁸Ward, A. W.: Inharmonious Cusp as a Factor in Periodontoclasia, J. A. D. A. 10:47 (June) 1923. Surgical Eradication of Pyorrhea, J. A. D. A. 15:2146 (November) 1928. Postoperative Care in Surgical Treatment of Pyorrhea, J. A. D. A. 16:635 (April) 1929.

⁹Crane, A. B. and Kaplan, Harry: Crane-Kaplan Operation for Prompt Elimination of Pyorrhea Alveolaris, D. Cosmos 73:643 (July) 1931.

Fig. 5—Extreme erosion of tooth structure; pulpless left incisor.

Fig. 6—Resection of gingivae to allow preparation of roots for jacket crowns; transitional celluloid crowns temporarily in position with gutta-percha.

Fig. 7—Jacket crowns inserted.

Fig. 8—Hyperplasia of maxilla; flabby alveolar ridges; resected by round loop electrode.





Fig. 9—Surgical cement pack applied. (See Color Plates I and II.)

Fig. 10—Appearance of newly formed granulation tissue when pack is removed. (See Color Plates I and II.)

Fig. 11—Electrocoagulation.

Fig. 12—Case healed two weeks later.

of zinc oxide and powdered resin, combined with a mixture of eugenol and heavy mineral oil.

On behalf of proprietary preparations it is claimed that the proper application of a surgical pack will prove efficient in overcoming postoperative pain, infection, and hemorrhage, by sealing the wounds against contact with infective and irritating substances, by protecting the blood clot during the process of regeneration, and finally through antiseptic and sedative action.

My experience with the use of surgical packs following electrosurgery has been disappointing. Bacteriologic tests¹⁰ show that the formulas had only feeble, if any, antiseptic properties. Subjectively, at the end of a

¹⁰Klarmann, E. G. and Plaut Research Laboratory: Personal communication to the author.

week, the patients complained of a congested feeling. On removal of the packs, secondary hemorrhage and uneven proliferation were observed. In several cases the teeth exhibited pericementitis. No particular advantage was noted in the reduction of postoperative pain. Thus, at least so far as electrosurgery is concerned, the use of the surgical pack appears to be irrelevant, clumsy, unsanitary, and unnecessary.

Phenol Derivatives

A review of recent publications on the subject of antibacterial agents indicates that the field of halogen and alkyl phenol derivatives is worthy of a study in connection with the problem at hand. A number of such compounds, prepared and described

by Klarmann and his co-workers¹¹ show intensive antibacterial action in vitro, coupled with a low toxicity for animals. To be sure, the combination of intensive bacteriotropic action with low organotropic action is important for the purpose under consideration. The first inquiry revealed that the phenol derivatives referred to represent largely "laboratory curiosities," and that individually they were not available for clinical use; however, a preparation (amphyl) is available which contains a bacteriologically balanced combination of such derivatives, making it virtually

¹¹Klarmann, E. G.; Shternov, V. A.; and Gates, L. W.: The Bactericidal and Fungicidal Action of Homologous Halogen Phenol Derivatives and Its "Quasispecific" Character, I. Derivatives of Parachlorophenol, *J. Lab. & Clin. Med.* 19:835 (May) 1934. II Derivatives of Orthochlorophenol, *ibid.* 20:40 (October) 1934.



Fig. 13—Appearance of mouth following two years of treatment. (Note recession and elimination of pockets.)



Fig. 14—Interior of mouth looking through mirror. Inlays restoring contact points.

nonspecific with regard to a variety of pathogenic bacteria and fungi. It contains as its active principle a mixture of p-chloro-symm.m.-dimethyl phenol (I) and p-tert. amyl phenol (II). These phenol derivatives are emulsified with a vegetable soap, and thus miscible with water in all proportions.

There is a report of its clinical study by Tritsch¹² for its efficacy in preventing infections following delivery.

The germicidal potency of amphyl and its nonspecific character are shown in table 1 which gives the maximum dilutions in which amphyl kills dense cultures of a number of pathogenic microorganisms in five minutes at body temperature:

TABLE 1—Germicidal Potency of Amphyl

Microorganisms	Maximum Effective Dilution (5 minutes)
<i>Staphylococcus aureus</i>	1:500
<i>Streptococcus hemolyticus</i>	1:600
<i>Streptococcus viridans</i>	1:1200
<i>Micrococcus catarrhalis</i>	1:1100
<i>Bacillus pyocyaneus</i>	1:350
<i>Mycobacterium tuberculosis</i>	1:700

Amphyl is effective also in shorter periods of time: a dilution of 1:250 destroys a culture of *Staphylococcus*

aureus in 1 minute, and one of 1:150 in 30 seconds. Efficient germicidal action on short exposure and demonstrable retention of antibacterial potency in the presence of organic matter makes the product interesting to the dentist because of its potential usefulness as a preoperative and postoperative mouth rinse.

The comparative lack of toxicity is illustrated by the following reported observations:

1. Subcutaneous injection in mice of the enormous doses of from 8 mg. to 9 mg. per gram of animal weight did not always prove lethal.

2. Oral administration to rats, rabbits and guinea-pigs of doses of less than 14 mg. per gram was tolerated.

3. Oral ingestion of the large doses of 4 mg. per gram every other day for two weeks, or of 1.5 mg. per gram every day for three weeks did not give any evidence of internal injury.

Another property which makes amphyl interesting to the dentist is its ability to depress surface tension; this, in turn, indicates a capacity for (1) spreading and penetration into tissue crevices; (2) increased osmosis and diffusion, and (3) accumulation of the antibacterial principle in the proximity of the surface (bacteria, tissue) toward which the antibacterial effect is directed.

Table 2 shows the surface tension of amphyl solutions of different concentrations, as determined by means of the du Noüy tensiometer (at 24° C.). It is significant that this reduction of surface tension is in evidence over the entire range of the "practical" concentrations, and also below and above them.

TABLE 2—Surface Tension of Amphyl Solutions of Varied Concentrations

Dilutions of Amphyl	Surface Tension in dynes/cm.
1:1 (undiluted)	34.3
1:2	50% 32.5
1:5	20% 32.0
1:10	10% 31.6
1:20	5% 31.9
1:50	2% 32.1
1:100	1% 32.1
1:200	.5% 31.3
1:500	.2% 31.1
1:1000	.1% 31.7
1:2000	.05% 34.5

In addition to the properties enumerated in table 2, the following deserves mention:

1. *Obtundent Action*—It is a well known characteristic of phenol derivatives that they produce a local obtundent action, sometimes resulting in ageusia. With amphyl, the obtundent effect following the use of a 0.5 per cent solution is of a sufficiently long duration, to control postoperative pain.

2. *Detergent Action*—The saponaceous component contributes an emulsifying and detergent effect on bacterial matter and desquamated cells in the form of slough which helps to keep the mucous membrane clear.

3. *Deodorant Action*—As a disinfectant agent, amphyl does not cover the fetor oris of bacterial origin, but it eliminates it by attacking its source.

Oral Medication

1. As a mouth rinse, a 0.5 per cent solution (preferably tepid) is used in postoperative treatment, for the irri-

¹²Tritsch, J. E.: A Comparative Study of the Effectiveness of Two Antiseptics in Preventing Infection Following Delivery, *Am. J. Obs. & Gyn.* 37:227-281 (February) 1939.

gation of wounds and for acute infections in the mouth. (This concentration is prepared conveniently by adding a teaspoonful of amphyl to a quart of water, or 30 drops to half a glass.)

2. For topical use, the following tinted formula is suggested, to help outline the field of application:

amphyl	5 cc.
alcohol	10 cc.
eosin	0.15 Gm.
water, q.s.	100 cc.

3. For root canal and alveolus treatment, concentrated solutions of the order of from 20 per cent to 50 per cent may be used, if desired.

4. For Vincent's infection, topical application of the 5 per cent formula (given under 2) and mouth rinse with the 0.5 per cent solution are recommended.

Additional Uses

Amphyl lends itself to certain other

uses which are of interest to the dentist:

For the disinfection of dental instruments, immersion in a 2 per cent solution for 15 minutes, is suggested. To obtain a transparent solution of increased stability (and to make instruments better visible while in the tray) the following mixture is recommended:

amphyl	2 parts by volume
alcohol	10 parts by volume
glycerin	5 parts by volume
water, distilled q.s.		100 parts by volume

For the hands, as an antiseptic rinse, following scrubbing, immersion in a 0.5 per cent solution for 2 minutes is suggested.

Disadvantages

Taste—The tingling sensation and soapy taste are found to be objectionable to some patients. Such objections may be overcome by stressing the therapeutic value.

Ageusia—Continuous use may develop prolonged ageusia which disappears soon after discontinuance.

Summary

The success of the treatment of soft tissue disease by electrocoagulation or electrosection depends to a large extent on (1) the mastery of the correct technique; (2) an understanding of physics of diathermy in general and the anatomy, physiology, and pathology of the mouth in particular; (3) a basic collateral medication which will supply the following effects: bactericidal, obtundent, desquamating; (4) restoration of mouth hygiene with the aid of mechanical means, such as prosthesis, correction of occlusion, massage, and home care; and (5) dietary management including therapeutic administrations of vitamins.

Walnut Park Plaza.

DENTAL MEETING

Dates

Ninth District Dental Society of Pennsylvania (Old Lake Erie), annual meeting, Bartlett Hotel, Cambridge Springs, September 27-28.

University of Buffalo Dental Alumni Association, fortieth annual meeting, Hotel Statler, Buffalo, New York, October 8-10.

American Association for the Advancement of Oral Diagnosis, annual meeting, Academy of Medicine Building, 2 East 103rd Street, New York, N. Y., October 17-18.

Odontological Society of Western Pennsylvania, Fall meeting, William Penn Hotel, Pittsburgh, October 22-24.

American Society for the Advancement of General Anesthesia in Dentistry, regular meeting, Midston House, New York City, October 28.

Mid-Continent Dental Congress, Hotel Jefferson, St. Louis, Missouri, October 27-30.

Greater New York Meeting, Hotel Pennsylvania, New York City, December 2-6.

The Greater Philadelphia Dental Society, annual meeting, Benjamin Franklin Hotel, Philadelphia, February 4-7, 1941.

Chicago Dental Society, Mid-winter meeting, Stevens Hotel, Chicago, February 17-20, 1941.

Louisiana State Dental Society, sixty-first annual meeting, Hotel Roosevelt, New Orleans, May 1-3.

The Dental Society of the State of New York, annual meeting, Hotel Statler, Buffalo, May 13-16, 1941.

Georgia State Dental Association, seventy-third annual meeting, Hotel DeSoto, Savannah, May 19-21, 1941.

California State Board of Dental Examiners, next regular meeting, College of Physicians and Surgeons in

San Francisco, week of December 16. Also at the University of California, College of Dentistry, during the same week. Applications must be filed at least 20 days prior to date of examination. For information write to Kenneth I. Nesbitt, D.D.S., 515 Van Ness Avenue, San Francisco.

New Jersey State Board of Dental Examiners, next regular meeting, week of December 9. Applications must be filed with the examination fee of \$25.00 with the secretary, Walter A. Wilson, D. D.S., 148 West State Street, Trenton.

The Connecticut Dental Commission, regular meeting, Hartford, November 19-24. Applications should be filed at least ten days prior to examination. For information write to C. G. Brooks, D.D.S., New London, Connecticut.

Ohio State Board of Examiners, regular meeting, College of Dentistry, Ohio State University, Columbus, week of October 28. Applications must be filed at least ten days prior to examination. For information write to Morton H. Jones, D.D.S., 1553½ North Fourth St., Columbus, Ohio.

The Editor's Page

THE TONGUE IS THE most neglected organ within the zone of dental interest. This mobile and muscular organ is constantly within the dentist's range of clinical vision but few dentists pay any attention whatever to its function or make any attempt to observe whether the tongue is in a state of health or disease. We dentists have been accused of concentrating our thought on the teeth alone, but we know that the teeth would be idle and useless structures without the muscles of mastication to force them together. The function of teeth would be difficult if an active tongue were not present to help control and propel the bolus of food. The success of dentures, particularly lower dentures, as substitute organs of mastication, depends to a large extent on the muscular adaptability of the tongue in function. Without the tongue, speech and taste would be impossible.

Since the beginning of medicine, this organ, the tongue, has been known to clinicians as an indicator of the patient's physical condition. In the memories of most of us is the recollection of the importance of the tongue to the family physician in our first encounters with him. We can still hear him saying, "Let me see your tongue." Upon the tongue are often recorded in eloquent symbols the records of physical dissipations and disturbances. The furred, coated tongue consists, according to Prinz and Greenbaum¹, of "cast off epithelial cells, precipitated mucin, inspissated saliva, leukocytes, bacteria, yeast cells, food débris. Various degrees of color are displayed by the coating, i. e., grayish-white, brownish, grayish or grayish-brown. The staining is largely due to drying out of the normal moisture and the impregnation of the fur with colored food débris, coffee, condiments, medicines." Although the furred and encrusted tongue is no longer regarded as pathognomonic of any specific disease, it does represent a symptom of some disturbance of the health of the patient.

The tongue is also subject to inflammatory reactions and to painful responses. The most common type of inflammation is Moeller's glossitis. It is thought that this condition is a concomitant symptom of some disturbance

of the blood, usually pernicious anemia. People suffering from this syndrome may make their first appearance in the dental office long before any of the other signs or symptoms of pernicious anemia are fully developed. Sufferers from Moeller's glossitis complain of a burning sensation of the tongue. They likewise present objective symptoms of fiery red markings on the surface of the tongue which are usually found more at the border and above and below the lingual tip. The tongue in Moeller's glossitis is usually free of epithelium which gives it a polished appearance; it is never furred or coated; it is smooth and shiny and red.

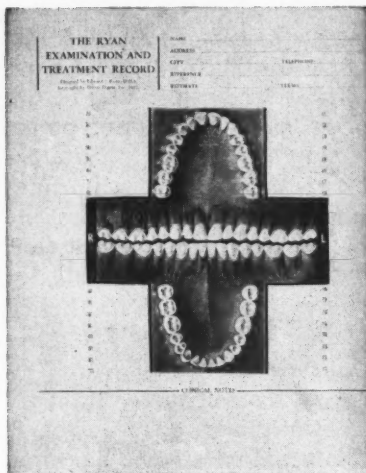
Another group of patients complain of burning tongue without the objective symptoms of redness. These sufferers from glossodynia usually complain of painfulness in the anterior half of the organ. Glossodynia is thought to be psychogenic in origin and to have no relation to pernicious anemia or avitaminosis. Pain without redness is diagnostic of glossodynia. Pain with a beefy red tongue indicates Moeller's glossitis. Another symptom associated with painful tongue is that of decreased or totally absent hydrochloric acid in the gastric juices.

The treatments for these various disturbances of the tongue fall within the province of internal medicine rather than under the heading of dentistry. Patients with anemia, avitaminosis or psychotic states certainly are not to be treated by dentists for their general ailments. Once again the relationship between structures and conditions within the oral cavity and the general well-being of the patient is emphasized. The dentist must know more than teeth if he is to treat patients intelligently. Intelligent dental treatment includes proper direction for collateral treatment. By knowing something of the general metabolic states, the dentist can truly occupy a position in the first line of health conservation. By early recognition of preclinical conditions, it is within the dentist's power to conserve health and save life.

¹ Prinz, Herman; and Greenbaum, S. S.: *Diseases of the Mouth and Their Treatment*, Philadelphia, Lea & Febiger, 1935, pages 443-451.

Suggestions for the use of

The Ryan Examination and Treatment Record



TYPES OF PENCILS

Yellow	Mongol No. 867
Gray	Mongol No. 819
Red	Mongol No. 866
Blue	Mongol No. 865
Yellow	Castell No. 40
Gray	Castell No. 57

Mongol pencils are made by Eberhard Faber; Castell by A. W. Faber.

SUGGESTED SYMBOLS

Each dentist may develop his own system of symbols but the following specific markings have been found simple and adequate:

Soft Lead Pencil—(a) Porcelain fillings are indicated by a pencil outline.

(b) Porcelain jacket crowns and bridges are shown by cross-hatching with lead pencil across the corresponding tooth or teeth on the chart.

(c) Missing teeth are blocked out with a soft lead pencil.

(d) Abrasions are represented with a soft lead pencil.

Blue Pencil—(a) Cavities are indicated with blue pencil.

(b) Advisable restorations are demonstrated with blue pencil.

Red Pencil—(a) A red line is used to indicate the presence of a root canal filling.

(b) A red outline shows the presence and position of an impacted tooth.

(c) Red pencil is used to represent pulp involvement.

(d) A red "X" is made across a tooth to indicate that its extraction has been advised.

(e) Pyorrhea pockets are represented in red along the crest of the alveolar ridge (and a notation is made at the bottom of the chart if extensive gingivitis is present).

1. The Ryan Examination and Treatment Record may be had in pads of fifty charts each. These pads fit conveniently in a standard 9½ by 11½ inch loose-leaf notebook which may be purchased at a five-and-ten cent or variety store.

2. Alphabetical dividers may be made by using a ten cent package of plain white paper of the same size as the charts with holes punched at the same distances, and a fifteen cent box of alphabetical index tabs. The holes are reinforced.

3. It is a good plan to keep a blank sheet of paper between the charts to prevent possible smearing of crayon or pencil markings; but this is not essential.

4. A fresh pad of charts may be kept ready for use in back of the notebook of active records.

5. The various types of restorations and their location in a particular mouth are shown with the use of polychrome pencils—gray, for amalgam; deep yellow, for gold. White pencil does not show up very well; consequently, porcelain may be indicated with soft lead pencil outlines or cross-hatching.

6. Spaces provided beside the quadrants with numbers corresponding to the teeth permit special notations concerning each tooth. As treatment progresses the blue markings indicating needed dentistry are erased, and the nature, location, and date of placement of each new restoration are recorded. Additional clinical notations are made if necessary in the space provided for that purpose below the chart itself.

7. It is essential to be consistent in any system of symbols or markings developed. To insure consistency, it is well to have a key page in the front of the notebook

8. The exact record of conditions found in the average patient's mouth at the original examination can be completed in fifteen or twenty minutes, and the time it takes to keep a chart up to date is negligible.

9. When a chart is completed the necessary data (name, address, telephone, reference, estimate, and terms) are typewritten in the spaces provided at the top of the record. The date of the original examination is also recorded in order that the treatment dates (as shown in the quadrants at the sides of the chart) will be recognized as subsequent to the date of the original examination.

10. Provision is made on the back of the chart for bookkeeping records. This is merely for the convenience of dentists who wish to keep all records together, but may be ignored by dentists who have a satisfactory bookkeeping system which they need not and do not wish to discard. The Ryan Examination and Treatment Record may be employed as an additional or supplementary record to any established method of record-keeping dentists may have.

11. Although the Ryan Examination and Treatment Record was designed for the dentist's own convenience in his practice, the charts have been found to have a definite informative value in explaining conditions to patients. The charts are also particularly helpful in reporting dental conditions of patients to cooperating physicians.

THE DENTAL DIGEST, 1005 LIBERTY AVE., PITTSBURGH, PA.

Here is \$1.00. Please send me a pad of 50 Ryan Examination and Treatment Record Charts.

Dr. Address

City State

(Or please use coupon on page 332)

If you have not ordered your charts, clip the coupon, and mail with a dollar bill.

VITAMIN "D" CAN HELP THEM KEEP



Fortunately, the need for Vitamin D as a factor in the development and protection of the teeth has often been demonstrated in controlled studies and reported in the dental journals.

Of special interest at this time of the year is the evidence that when sunshine decreases, dental caries increase. By September 15, sunshine's Vitamin D effect is only $\frac{3}{8}$ of its mid-summer value. By December 15, only $\frac{1}{8}$.

Many Factors Decrease Sun's Vitamin D

Nor is the decreased Vitamin D value of sunlight the only condition which is now unfavorable to tooth health. Young and old alike spend more time indoors, in school, at work, or at play. Clothes, clouds, and smoke pollution all obstruct the Vitamin D effect of the sun's already meagre ultraviolet rays.

Ordinary Foods Lack Vitamin D

While a well selected diet provides many kinds of essential nourishment, foods, generally, supply little or no Vitamin D. And important as calcium and phos-

phorus are potentially for tooth building, nourishment, and protection, these minerals depend upon Vitamin D for their proper utilization.

Added Vitamin D Most Needed NOW

To provide Vitamin D regularly in inexpensive form, a number of common, widely consumed products have been fortified with Vitamin D under license from this Foundation. Most of them cost no more than similar products not so enriched—each of them provides an important Vitamin D supplement that helps to benefit the teeth. Why not suggest the use of these foods to your patients when advising them in matters of proper tooth care.

The increase in dental caries during the "sun-poor" season, commonly observed in the practice, is concisely reported by the University of Maine Agricultural Experiment Station as follows: "In the Fall the average number of cavities per mouth was 12, and there was only one child with no cavities. In the Spring the number had increased to 15.7."



Every licensee of the Foundation is entitled to use this Seal on his licensed Vitamin D products and in related advertising. Every product licensed by the Foundation is periodically tested whether or not the Seal appears thereon. Write for this authoritative Booklet—sent Free upon request.

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Quaker Farina and Muffets—Rich in Vitamin D.



Cocomalt and Sunshine Graham Crackers—good sources.



Sunfed Flour and Bread—a better "Staff of Life."



Salerno Graham Crackers—enriched with Vitamin D.



Ovaltine, Dryco and Fleischmann's Yeast—good sources.

Also Viosterol and Viosterol-fortified medicinals prescribed by physicians



Every Detail of CAVITY PREPARATION



Magnified eight diameters this pattern shows plainly the outstanding ability of KERR Blue Inlay Casting Wax to faithfully reproduce every detail of cavity preparation.

Preferred by thousands of Dentists for all inlay work, KERR Inlay Casting Wax (Hard) is rigid at body temperature yet softens at only a few degrees higher. It is guaranteed to meet tentative specifications No. 4 of the

American Dental Association. This wax possesses the same excellent working and carving qualities that characterize the famous KERR Blue Inlay Casting Wax (Regular) but the Hard remains slightly more rigid when carving in the mouth.

We commend these KERR Waxes to you as worthy of the name they bear—adequate media for the needs of your professional skill.

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DEPENDABLY SOOTHING AND HEALING TO TISSUES

Mu-col

For the patient's comfort after extractions and to aid normal granulation, rely on MU-COL—a definitely superior saline-alkaline bacteriostatic, preferred by many dentists for over a quarter century. Patients like to use MU-COL as a mouth wash at the chair and at home. It is also a better cleanser for dentures. In powder form, it will not deteriorate and is quickly soluble.

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NOTES ON THE

Cuff

Blood Sugar at Par . . .

"Keep your blood sugar at par" might be the new slogan for golfers. Added to the excuses in the average golfer's bag of alibis may now be the expression, "My game is off because I am suffering from hypoglycemia." Hypoglycemia should offer a much more convincing alibi than "a hard night before," "blisters on the hand," "can't keep my head down," "looking at the scenery." Hypoglycemia is that state produced often by exercise and anxiety wherein the blood sugar drops to low level and the symptoms of fatigue and inefficiency develop.

A physician studied the field among the two million golfers playing on the three thousand golf courses in the United States and wondered why so many of them had such a tough time with the scores between the ninth and fifteenth holes. In this exasperating zone he found that golfers showed the faces of anxiety, cursed more vehemently, and missed more shots than any other place on the course. The erratic behavior of golfers in this zone of stress stimulated the scientific imagination of this physician who hauled his blood testing machinery out on the golf courses and studied the blood sugar of thirty typical middle aged golfers. He found the blood sugar at its lowest between the ninth and fifteenth holes in foursomes and between the eleventh and fifteenth holes in twosomes. It was at this time that golfers complained most of fatigue symptoms; where they found the sandtraps the most seductive, fanning the ball the most likely, and keeping on the straight and narrow the most difficult. The dubs with the high handicaps had the lowest blood sugar because they expended more mental and physical energy in the game. The vicious circle continued. With the increase in the anxiety state, the developing tenseness and the "pressing too hard," down went the blood sugar a little more, with the consequence that the playing skill

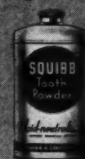
An Adventure in Refreshment



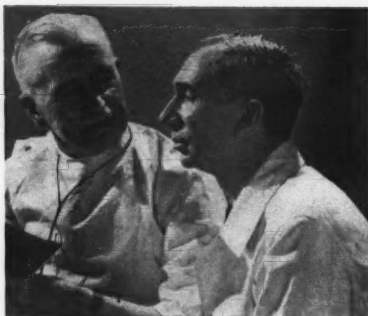
By recommending Squibb Dental Cream you can provide your patients with an adventure in refreshment. There's something irresistible in the keen, cool, minty fragrance of Squibb Dental Cream. And, because they will like it, they'll brush their teeth more regularly and thus give you better cooperation in the home care of teeth—a necessary adjunct to your scientific care.

Squibb Dental Cream cleans and polishes thoroughly, yet ever so gently, and there's concentrated Squibb Milk of Magnesia in it . . . to neutralize bacterial acids when it comes in contact with them.

And here is something else to think about . . . so important to us is the purity and safety of Squibb Dental Cream, that it must pass 239 separate tests to qualify for the Squibb control number, recorded on each tube or carton . . . a good reason to recommend Squibb Dental Cream to all your patients. . . . For patients who prefer powder, Squibb Tooth Powder provides the same scientific advantage as Squibb Dental Cream and is equally enjoyable and effective.



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MANUFACTURING CHEMISTS TO THE MEDICAL PROFESSION SINCE 1858.



"Here, Doctor, are some reasons why I chose the NARGRAF"

"I wanted a machine that would promote anesthesia as easily as possible for the patient and at the same time provide me with maximum control of my patient during anesthesia. With the Nargraf intermittent flow principle, the flow of gas is coordinated with the patient's respiration; thus, whether the patient is a shallow, slow breather or breathes with quick, deep rhythm, gas is administered under constant, unvarying pressure only during inhalations.

"In addition to providing easier and better controlled anesthesia, this intermittent flow principle greatly simplifies the technic. Because the Nargraf actually breathes with the patient, fewer adjustments of the mixture are necessary, once anesthesia has been established, and I am left free to devote all my attention to the operation at hand.

"I wanted simple, safeguarded control. With the Nargraf I got the ultimate in efficient simplicity. One mixing valve controls the flow of both nitrous oxid and oxygen. I have only to press the reoxygenating button to administer pure oxygen.

"And, of course, economy was an important consideration. With the Nargraf I got the maximum in gas economy. This economy factor has resulted in savings of gas up to 50%.

"Now that you are thinking about new gas equipment, why not have the McKesson representative call and tell you the complete Nargraf story. Once you know the Nargraf, it will be hard to please you with any other gas machine."

McKesson Appliance Co.
Toledo, Ohio

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was further reduced. A simple remedy was suggested by this earnest investigator: a more ketogenic type of luncheon (which is another way of saying eating "stuff that will stick to the ribs" a little better) and the consumption of sugar or candy at the seventh or ninth hole.

I can see the American sugar refineries and the candy manufacturers doing a bigger business with the golfing population. Every golf course will have its candyarium about midway along the course. Eat more candy. Down with your score; up with your blood sugar! And see your dentist more than twice a year!

Susan and God

The Hayes office in the moving picture industry attempts to keep most of the moral degradation out of the motion pictures. By self-imposed censorship the moving picture industry tries to keep itself reasonably clean and inoffensive to the mores of the American people. It is too bad that a similar voluntary effort isn't made on the part of the moving picture makers to review pictures for the possible harm that might befall the health of the American people by injecting in the movie script suggestions inimical to health and well-being.

By way of example, one of the current favorites, *Susan and God*, shows an ugly duckling undergoing orthodontic treatment and visual correction. Kids in adolescence are likely to look pretty awkward at best and when a pair of glasses are hung on them as well as orthodontic appliances, they will look even worse. Most people, however, have sense enough to know that the corrective period is as transitory as the difficult biologic stage itself. We make every effort to impress on children, reluctant to undergo treatment, that the corrections are done with the idea that in later life their appearance and health will thereby be improved. Parents and dentists often have a pretty tough time convincing youngsters that the appliances in their mouths today are for their future advantage. A motion picture showing what happens when a mother takes it upon herself as "Doctor Susan" to discard eyeglasses and orthodontic appliances and thus transforms her daughter from the ugly duckling to the glamorous debutante by throwing away "that bit in her mouth"—such a motion



There are plus values in Ames Dental Cements which the profession ever finds to facilitate application and to enhance results. These extra qualities are the products of years of scientific specialization constantly carried on in the only factory in the world devoted entirely and exclusively to this one product. The Ames line includes all cements required in practice. They are packaged in modern money-saving units. Ask your dealer. THE W. V-B. AMES COMPANY, Fremont, Ohio.



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Practical for all teeth . . . in mouths of widely varying shapes.

Will accommodate any standard make of dental film. May be used with any standard x-ray apparatus.

Saves time and money.

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A PERFECT PLATE ...Yet a mental hazard

AUTHORITIES SAY NEW-DENTURE SUCCESS 60% MENTAL

Why are so many fine dentures doomed to be discarded? Because even the best-made plate is a huge, hard, foreign mass in a mouth that's never worn one. Exerting a biting pressure of 15 to 25 pounds, it torments tender gums . . . often becomes a "mental handicap" . . . and may end up, unused, in a bureau drawer. Unfortunately, no compliment to the dentist who made it!

EVEN THE FINEST PLATES NEED

SHOCK ABSORBERS. That's why during the difficult "learning period," thousands of thoughtful dentists prescribe DR. WERNET'S Powder . . . to provide a protective comfort cushion . . . to lessen irritation . . . to promote ease and assurance . . . to speed denture mastery . . . and to insure denture success!

A leader for almost 30 years, DR. WERNET'S Powder is never advertised to the public. We believe only a dentist is qualified to prescribe its use. SEND FOR YOUR FREE SUPPLY! Mail lower portion of this page, with your card, or letterhead, to Wernet Dental Mfg. Co., Dept. A, 190 Baldwin Ave., Jersey City, New Jersey.

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picture doesn't help the problem of dealing with youth. This movie will give too many kids the impression that without the corrective mechanisms of glasses and orthodontic appliances their social success would be assured. Many American mothers will probably find a new argument advanced by their movie-addicted children: that eyeglasses and straightening teeth are the bunk.

No one wants censorship of any kind in the United States, because as Mr. Harry Hirschman, counsel for *Esquire*, says, "If any man were capable of censorship he would be too wise to be a censor." It would be fine, nevertheless, if the moving picture industry with its tremendous opportunity for good through subtle rather than didactic techniques would think in terms of effects on the health of American youth, and not set up educational barriers. *Susan and God* may be good entertainment but it is extremely bad propaganda, adverse to present-day health efforts.

From the Mail Bag . . .

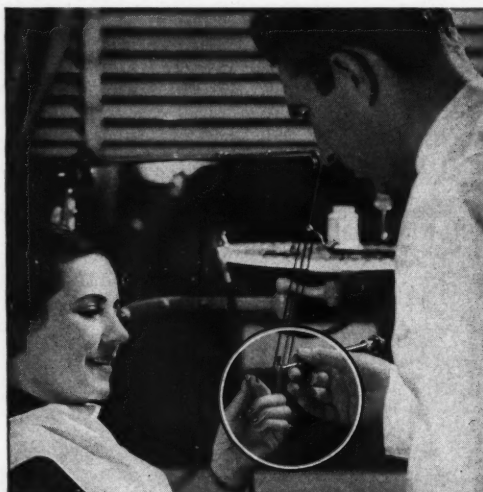
Following the publication of some Notes on smoking women in the July Digest the contents of the mail bag

seemed to suggest that this editor was some kind of a reformer and anti-cigarette league member. The Notes on the subject of smoking for women were confined to smoking in the dental office, which to my mind

seems to be no place for either the patient or the dentist to smoke. It is just as annoying for the dentist to present himself to the patient with cigarette-smelling fingers as it is for the patient to blow smoke in the op-

BS Polishers . . . your guarantee

of safe, thorough
prophylaxis!



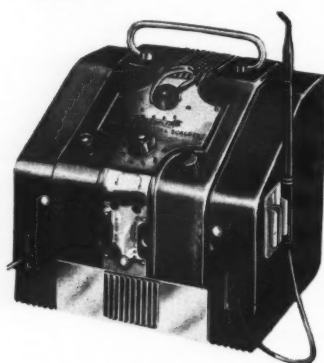
BS POLISHERS are the oldest and largest selling polishers in America and many foreign countries. That's your guarantee of safety, convenience, and efficiency. BS POLISHERS quickly and thoroughly clean deep points of pits and fissures . . . between teeth and under free gum margin without injuring delicate gum tissue. BS POLISHERS run cool and smooth. Corrugation inside cup holds abrasive firmly against tooth surface and prevents throwing and splattering. Why experiment with the good will of your patients? Demand BS POLISHERS. Free sample sent on request.

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The WAPPLER *Electro Dental* SCALPEL

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PROVIDES TISSUE-CUTTING, hemostatic and electro-coagulating currents of correct characteristics in instances of gingival infection where either excision with the electric scalpel or electro-coagulation is indicated. Generating both electro-coagulating currents as required in the control of pyorrhea and tissue cutting currents for excision of diseased tissues with minimal bleeding, the Wappler Electro Dental Scalpel combines with these basic modalities a unique design permitting their application for all dental surgery.

PROGRESSIVE DENTISTS

Everywhere are adopting electrosurgical methods (electric cutting and electro-coagulation) because of its manifest advantages over the scalpel. Briefly enumerated these advantages are:*

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|---|-----------------------------|
| 1. Destruction of diseased tissues in situ. | 5. No wiping or aspirating. |
| 2. Less tissue manipulation. | 6. More rapid healing. |
| 3. Complete sterilization. | 7. Soft scar formation. |
| 4. Bloodless operating field. | 8. Speed. |

GINGIVAL TISSUE EXCISED WITH LESS TRAUMA

With the electric scalpel, diseased gingival tissue may be excised with less trauma than with the scalpel without noticeable sear and almost complete absence of bleeding. With the Wappler Electro Dental Scalpel the tissues are parted or severed by the electrode without application of force or pressure. The handpiece is simply guided.

In addition to its uses in* major oral surgery the electric scalpel is indicated in such cases as

Erupting teeth	Gingivectomy
Pericoronal infections	Frena
Overhanging or hyperplastic tissue	Muscle attachments
Swollen interproximal papillae	Movable tuberosities
	Hemorrhage in socket
	Hemorrhage in tissue

*Zimmer, Morris A., D.D.S., "The Radio Knife in Dentistry" *Dental Survey*, July, 1936.

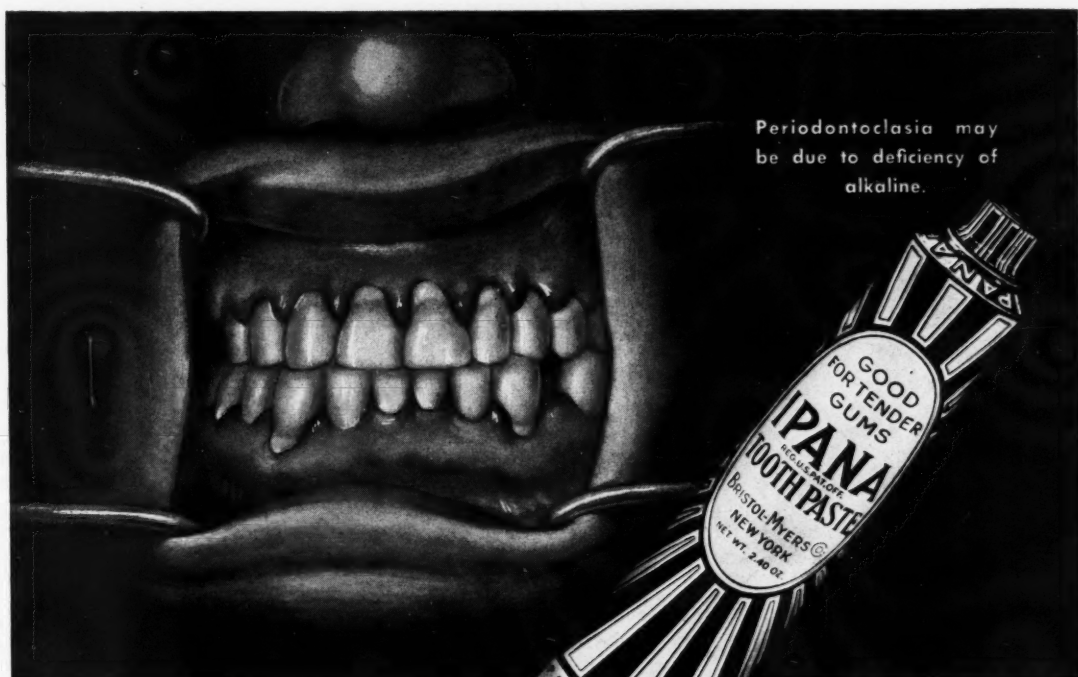


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Periodontoclasia may
be due to deficiency of
alkaline.

Down

GO GINGIVAL ALKALINES

Lack of gingival stimulation, resulting in capillary dilatation and stasis, tends to lower the normal supply of alkaline salts and buffers which are needed for neutralization of acid products of tissue metabolism. Restoration of more vigorous blood flow with IPANA and massage helps to build up and maintain a more normal alkaline reserve, improve the supply of cellular nutriment and increase the efficiency with which waste is removed. Gums tend to become firmer and more resistant.

Brighter teeth result from regular use of IPANA. Its pleasant flavor makes it practically a universal favorite.

"Use IPANA on a D.D. Tooth Brush."

May we send you samples?

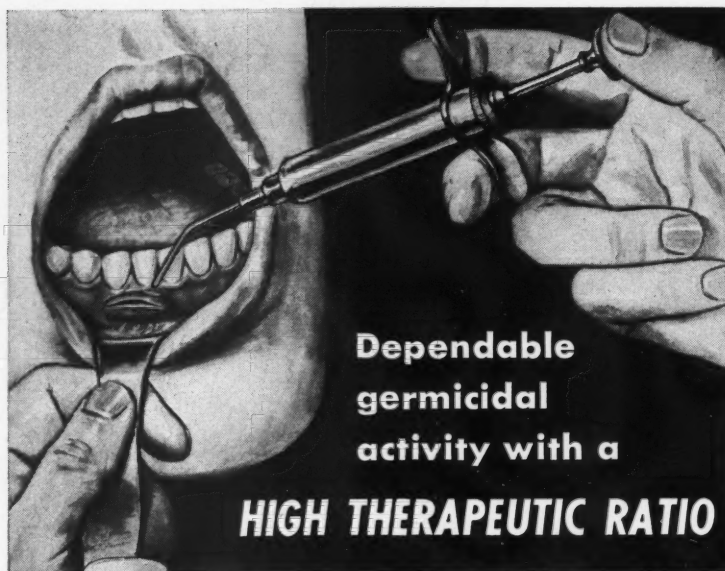


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CLINICALLY, the dental surgeon selects therapeutic and prophylactic preparations which do not interfere with normal physiology in the dental zone. In the field of antiseptics, on the basis of germ-killing action and tissue toxicity, Hexylresorcinol 'Solution S.T. 37' is probably the safest and most effective antiseptic available for clinical use.

All recognized standard methods for testing germicides demonstrate the germicidal activity of Hexylresorcinol 'Solution S.T. 37.' It is germicidal in the presence of serum, blood and organic matter. It is germicidal in dilution with four or five parts of water.

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erator's face. Two typical letters from readers will give their slant on the smoking nuisance in the dental office. Here they are:

"Maybe I'm just lucky but 'smoking women' are a small problem in my office. First, neither my assistant nor I use the filthy weed. Second, there is no ash tray in the reception room or operating room to suggest smoking. Occasionally we have to find any sort of receptacle, not a fancy one, to use for an ash pan for a male or female furnace, which is a gentle hint that we do not expect people to smoke in the office. When women ask if smoking is harmful to the teeth I tell them 'every smoke stack gets sooty.' Your tirade indicates you object to being a chimney sweep too.

"Yours for cleaner working conditions, *Earl D. Fritsch, Highland Park, Illinois.*"

"On a tray directly in front of the chair we keep a metal container filled with cleaning tissue. When the American Beauty is comfortably seated prior to treatment, I remove two pieces of paper. One is placed on the bracket table as an instrument wipe and the other is handed to the patient. Usually with some humorous remark, she is asked to remove her lipstick.

"After one or two future visits, it has been our pleasure to have patients request tissues for lipstick removal or to come in without that adornment in place.

"To a few Lady Nicotine serves as a more potent sedative than a sizzling cup of triple bromides; consequently, a cigaret or two provided for these occasional human high tension wires is an excellent remedy.

"'No Smoking' signs may be in order in some public buildings, but never in a dental office. To habitual smokers, this sign is an encroachment on a personal liberty. It would be resented. No one likes signs that say 'Keep off the grass,' 'Stand in line,' '15 Mile speed limit,' 'No Smoking.'

"Most people, particularly in the office of a physician or dentist, display patterns of behavior which are comparable to Sunday manners. The dentist, however, must set the example by his own conduct.—*S. J. Bregstein, Brooklyn, New York.*"—*E. J. R.*